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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,404	05/26/2006	Richard P Wood	SMBZ 2 01036	2871
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Fay Sharpe LLP 1228 Euclid Avenue, 5th Floor The Halle Building Cleveland, OH 44115				
EXAMINER				
WALFORD, NATALIE K				
ART UNIT		PAPER NUMBER		
2879				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/534,404

Applicant(s)

WOOD ET AL.

Examiner

NATALIE K. WALFORD

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2009.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 17-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-15 and 17-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 26 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The Amendment, filed on April 6, 2009, has been entered and acknowledged by the Examiner. Cancellation of claim 16 has been entered. Claims 1-15 and 17-20 are pending in the instant application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7-9, 11-12, 15, 17, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Adachi et al. (US PUB 2002/0093284).

Regarding claim 1, Adachi discloses an electroluminescent device in figure 1, comprising a semi- reflecting structure (item 200), a reflecting structure (item 300), and a plurality of intermediate layers (item 110) for light generation, wherein said semi-reflecting structure thickness is chosen to cause destructive optical interference of ambient light reflected thereby (see FIG. 1), and said intermediate layers have thicknesses chosen to create a microcavity for causing constructive optical interference of light generated therein and approximately 360° phase change of transmitted ambient light passing therethrough from said semi-reflecting structure and reflecting off said reflecting structure (see FIG. 1), such that said transmitted ambient light is subjected to further destructive optical interference within said semi-reflecting structure (see

FIG. 1), wherein the intermediate layers are selected to have a refractive index that increases with wavelength. The Examiner notes that since the intermediate layers of Adachi are made from the same material as disclosed by Applicant, Adachi would inherently have the same refractive index as claimed by Applicant.

Regarding claim 2, Adachi discloses the electroluminescent device of claim 1, wherein said intermediate layers include a hole-carrier layer (item 102) and electron-carrier layer (item 101) with a light generating region at the interface therebetween (see FIG. 1).

Regarding claim 3, Adachi discloses the electroluminescent device of claim 2, wherein said hole-carrier layer comprises TPD (paragraph 58) and said electron-carrier layer comprises AlQ3 (paragraph 58).

Regarding claim 4, Adachi discloses the electroluminescent device of claim 3, wherein said intermediate layers include a buffer layer of CuPC adjacent said TPD layer (paragraph 52).

Regarding claim 5, Adachi discloses the electroluminescent device of claim 4, wherein said intermediate layers include a conductive layer of ITO (item 200) adjacent said CuPC layers buffer layer (paragraphs 52-53).

Regarding claim 7, Adachi discloses the electroluminescent device of claim 1, wherein said semi-reflecting structure comprises at least one layer of Al, SiO₂ and Cr (paragraph 54).

Regarding claim 8, Adachi discloses the electroluminescent device of claim 1, wherein said reflecting structure comprises a layer of Al (paragraph 54).

Regarding claim 9, Adachi discloses the electroluminescent device of claim 1, wherein said reflecting structure is deposited on a substrate (not shown) so as to form a top emission device (see FIG. 1).

Regarding claim 11, Adachi discloses the electroluminescent device of claim 10, wherein said substrate is one of either clear plastic or glass (paragraph 174).

Regarding claim 12, Adachi discloses the electroluminescent device of claim 1, wherein said intermediate layers include one of either light emitting polymers (paragraph 62) or inorganic light emitting materials.

Regarding claim 15, Adachi discloses the electroluminescent device of claim 1, wherein said intermediate layers are selected such that the 360° phase change (see FIG. 1) extends over the visible light range (paragraph 19).

Regarding claim 17, Adachi discloses the electroluminescent device of claim 7, wherein said reflecting structure is deposited on a substrate so as to form a top emission device (see FIG. 1).

Regarding claim 19, Adachi discloses the electroluminescent device of claim 8, wherein said reflecting structure is deposited on a substrate so as to form a top emission device.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 10, 13-14, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adachi et al. (US PUB 2002/0093284).

Regarding claim 6, Adachi discloses the electroluminescent device of claim 5, but does not expressly disclose that said thicknesses of the intermediate layers are as follows: AlQ3 = 200 to 800 Angstroms, TPD = 200 to 500 Angstroms, CuPC = 0 to 500 Angstroms, ITO = 0 to 2500 Angstroms, as claimed by Applicant. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have said thicknesses of the intermediate layers are as follows: AlQ3 = 200 to 800 Angstroms, TPD = 200 to 500 Angstroms, CuPC = 0 to 500 Angstroms, ITO = 0 to 2500 Angstroms, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 10, Adachi discloses the electroluminescent device of claim 1, but does not expressly disclose that said semi-reflecting structure is deposited on a transparent substrate so as to form a bottom emission device, as claimed by Applicant. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have said semi-reflecting structure is deposited on a transparent substrate so as to form a bottom emission device, since it has been held that rearranging parts of an invention involves only routine skill in the art. Furthermore, Applicant has not disclosed that having said semi-reflecting structure deposited on a transparent substrate so as to form a bottom emission device solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a top emission device.

Regarding claim 13, Adachi discloses the electroluminescent device of claim 7, but does not expressly disclose that said semi-reflecting structure comprises AlSiO (ratio 3:2, 5.5nm), SiO₂ (60nm), and aluminum (10 nm), as claimed by Applicant. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have said semi-

reflecting structure comprises AlSiO (ratio 3:2, 5.5nm), SiO₂ (60nm), and aluminum (10 nm), since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 14, Adachi discloses the electroluminescent device of claim 6, but does not expressly disclose that said thicknesses of the intermediate layers are as follows: AlQ₃ = 600 Angstroms, TPD = 450 Angstroms, CuPC = 250 Angstroms, ITO = 1200 Angstroms, as claimed by Applicant. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have said thicknesses of the intermediate layers are as follows: AlQ₃ = 600 Angstroms, TPD = 450 Angstroms, CuPC = 250 Angstroms, ITO = 1200 Angstroms, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 18, Adachi discloses the electroluminescent device of claim 7, but does not expressly disclose that said semi-reflecting structure is deposited on a transparent substrate so as to form a bottom emission device, as claimed by Applicant. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have said semi-reflecting structure is deposited on a transparent substrate so as to form a bottom emission device, since it has been held that rearranging parts of an invention involves only routine skill in the art. Furthermore, Applicant has not disclosed that having said semi-reflecting structure deposited on a transparent substrate so as to form a bottom emission device solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a top emission device.

Regarding claim 20, Adachi discloses the electroluminescent device of claim 8, but does not expressly disclose that said semi-reflecting structure is deposited on a transparent substrate so as to form a bottom emission device, as claimed by Applicant. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have said semi-reflecting structure is deposited on a transparent substrate so as to form a bottom emission device, since it has been held that rearranging parts of an invention involves only routine skill in the art. Furthermore, Applicant has not disclosed that having said semi-reflecting structure deposited on a transparent substrate so as to form a bottom emission device solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a top emission device.

Response to Arguments

Applicant's arguments with respect to claims 1-15 and 16-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Juni et al. (US PUB 2005/0142379) is cited to show an electroluminescent device.

Wano (US PUB 2007/0052345) is cited to show an organic electroluminescent device and method of manufacturing the device.

Hasegawa et al. (US PUB 2007/0069641) is cited to show a display device.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalie K. Walford whose telephone number is (571)-272-6012. The examiner can normally be reached on Monday-Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

nkW
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